Database :

A_Geneseq_16Dec04:*

1: geneseqp1980s:*

2: geneseqp1990s:*

3: geneseqp2000s:*

4: geneseqp2001s:*

5: geneseqp2002s:*

6: geneseqp2003as:*
7: geneseqp2003bs:*

8: geneseqp2004s:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

		8					
Result		Query					
No.	Score	Match	Length	DB	ID		Description
1	1724	100.0	329	6	ABU11876	rwn	Abull876 Thale cre
2	1703	98.8	327	8	ADN73841	U	Adn73841 Thale cre
3	1703	98.8	329	5	AAM50863		Aam50863 Arabidops
4	1698	98.5	327	3	AAG18223		Aag18223 Arabidops
5	1681	97.5	323	3	AAG18224		Aag18224 Arabidops
6	1330	77.1	250	3	AAG18225		Aag18225 Arabidops
7	113.5	6.6	549	6	ABU03090		Abu03090 Alpha amy
8	110.5	6.4	514	2	AAR78269		Aar78269 Bacillus
9	110.5	6.4	515	2	AAR72449		Aar72449 Bacillus
10	110.5	6.4	515	2	AAW31406		Aaw31406 Bacillus

```
RESULT 1
ABU11876
ID
    ABU11876 standard; protein; 329 AA.
XX
AC
    ABU11876;
XX
DT
     13-FEB-2003 (first entry)
XX
DE
     Thale cress HY2 polypeptide.
XX
KW
     Thale cress; HY2; nucleus; phytochrome; apoprotein; cytoplasm;
KW
    heterologous transactivator; heterologous repressor; light response.
XX
OS
    Arabidopsis thaliana.
XX
PN
     WO200297137-A1.
XX
PD
     05-DEC-2002.
XX
PF
     29-MAY-2002; 2002WO-US017266.
XX
PR
     29-MAY-2001; 2001US-0294463P.
XX
PΑ
     (REGC ) UNIV CALIFORNIA.
XX
PΙ
    Lagarius JC, Kochi T, Frankenberg N, Gambetta GA, Montgomery BL;
XX
DR
    WPI; 2003-041421/03.
DR
    N-PSDB; ABX50071.
XX
PT
    Transporting a polypeptide into the nucleus of a cell comprises using
PT
    light to transport a polypeptide attached to the apoprotein component of
PT
    a phytochrome into the nucleus.
XX
PS
     Example 1; Fig 3B; 102pp; English.
XX
CC
    The invention relates to a method for transporting a polypeptide into the
CC
    nucleus of a cell, comprising expressing a phytochrome comprising the
CC
    polypeptide attached to the apoprotein component of the phytochrome in a
CC
    cell, and exposing the cell to light where the phytochrome migrates from
CC
     the cytoplasm of the cell into the nucleus which transports the
CC
    polypeptide into the nucleus. The invention also relates to regulating
CC
    the transcription of a gene in response to light comprising expressing a
CC
    phytochrome containing a heterologous transactivator or repressor
CC
    attached to an apoprotein component of the phytochrome in a cell, and
CC
    exposing the cell to light where the phytochrome migrates from the
CC
    cytoplasm of the cell into the nucleus and the transactivator or
CC
    repressor alters expression of a gene in the nucleus. The methods are
CC
    used to transport a polypeptide into the nucleus of a cell or to regulate
CC
    the transcription of a gene in response to light. This sequence
CC
    represents the thale cress HY2 polypeptide used in the scope of the
CC
     invention
XX
SO
    Sequence 329 AA;
 Query Match
                          100.0%; Score 1724; DB 6; Length 329;
 Best Local Similarity 100.0%; Pred. No. 9.7e-169;
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											,				
	Matches	329	€;	Conserv	ative	0;	Mism	atches	(ο;	Inde	ls	0;	Gaps	0;
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. D	b	1	MAL	SMEFGFS	IGSCFK	(APNPP	VLISAS	PNKINF	TLRRI	RKKR	FLLR	VSAVS	SYKEF	AESALE	60
Q	У	61	ETR	KRIVLEP	SHLQEK	YSSMT	GLDGKT	ELQMLAI	FKSSI	KIRL	LRSM	AIENE	etmqv 	FDFAGF	120
D	b .	61	ETR	KRIVLEP	SHLQEK	YSSMT(GLDGKT	ELQMLA	FKSSI	KIRL	LRSM	AIENE	TMQV	FDFAGF	120
Q	У	121	MEP	EYDTPIF	CANFFT	STNVN	IVVLDL	NPLHQLT	TDQTI	OYQD 	KYYNI	KIMSI	YHKY	AETFPW	180
D	b	121	MEP	EYDTPIF	CANFFI	STNVN	İVVLDL	NPLHQL:	TDQTI	DÝQD	KYYNI	KIMSI	ŶĤĸŸ	AETFPW	180
Q	У	181	GGK	LTGESIK 	FFSPLV	MWTRF:	SSSKEK 	HKALFSA	AFLEY	YYQA 	WLEM'	riqvi 	REEME	PSHVRA	240
D	b	181	ĞĞK	LTGESIK	FFSPLV	MWTRF	SSSKEK	HKALFSA	AFLE	ŶŶQĀ	WLEM'	riqvi	REEME	PSHVRA	240
Q	У	241	NCE	AQHKYLT 	WRAQKI 	PGHGL	LKRLVG 	EAKAKEI 	LLRDI	FLFN	IGVDEI	LGTKT	FIDY	FPEYQT	300
D	b	241	NCE	ÄQHKYLT	WRAQKE	PGHGL	LKRLVG	EAKAKEI	LLRDI	LFN	GVDE	LGTKI	FIDY	FPEYQT	300
Q	У	301	EDG	TVSDKRS 	IIGKSY	ETRPWI	OLTGQF 	IG 329							
D	b	301	EDG	TVSDKRS	IIGKSY	ETRPW	OLTGQF	IG 329							

Database :

UniProt_03:*

1: uniprot_sprot:*
2: uniprot_trembl:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

Result		% Query				
No.	Score		Length	DB	ID	Description
1	1724	100.0	329	1	PFBS ARATH	Q9sr43 arabidopsis
2	832.5	48.3	297	2	Q6E5A3	Q6e5a3 zea mays (m
3	592	34.3	240	2	Q8RZB6	Q8rzb6 oryza sativ
4	339.5	19.7	255	1	PEBB_NOSPU	Q93tm8 nostoc punc
5	330.5	19.2	255	2	Q6UR87	Q6ur87 fremyella d
6	292.5	17.0	245	1	PEBB_GLOVI	Q7nl65 gloeobacter
7	217.5	12.6	257	1	PEBB_SYNPY	Q02190 synechococc
8	216	12.5	257	1	PEBB_PROMM	Q7v585 prochloroco
9	215	12.5	257	1	PEBB_PROMA	Q9k4u5 prochloroco
10	209	12.1	262	1	PEBB_SYNPX	Q7u4p6 synechococc
11	202	11.7	244	1	PEBA_NOSPU	Q93tl6 nostoc punc
12	178	10.3	243	2	Q6UR88	Q6ur88 fremyella d
13	172.5	10.0	257	1	PEBB_PROMP	Q93sn7 prochloroco
14	158	9.2	236	1	PEBA_SYNPY	Q02189 synechococc
15	147	8.5	244	1	PEBA_GLOVI	Q7nl66 gloeobacter
16	145	8.4	235	1	PEBA_SYNPX	Q7u4p7 synechococc
17	136	7.9	236	1	PEBA_PROMP	Q93sn8 prochloroco
18	135	7.8	249	1	PEBA_PROMM	Q7v586 prochloroco
19	133.5	7.7	267	2	Q7XY33	Q7xy33 griffithsia

```
RESULT 1
PFBS ARATH
     PFBS ARATH
                                   PRT:
ID
                    STANDARD;
                                           329 AA.
AC
     Q9SR43; Q8L8Q6; Q9SS72;
DT
     28-FEB-2003 (Rel. 41, Created)
DT
     28-FEB-2003 (Rel. 41, Last sequence update)
DT
     25-OCT-2004 (Rel. 45, Last annotation update)
     Phytochromobilin: ferredoxin oxidoreductase, chloroplast precursor
DE
     (EC 1.3.7.4) (Phytochromobilin synthase) (PFB synthase) (PPhiB
DΕ
     synthase).
     Name=HY2; OrderedLocusNames=At3g09150; ORFNames=F3L24.1, MZB10.18;
GN
OS
     Arabidopsis thaliana (Mouse-ear cress).
OC
     Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
OC
     Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; rosids;
OC
     eurosids II; Brassicales; Brassicaceae; Arabidopsis.
OX
     NCBI TaxID=3702;
RN
     [1]
RP
     SEQUENCE FROM N.A. (ISOFORM 1).
RX
     MEDLINE=21124703; PubMed=11226195;
     Kohchi T., Mukougawa K., Frankenberg N., Masuda M., Yokota A.,
RA
RA
     Lagarias J.C.;
RT
     "The arabidopsis HY2 gene encodes phytochromobilin synthase, a
RT
     ferredoxin-dependent biliverdin reductase.";
RL
     Plant Cell 13:425-436(2001).
RN
RP
     SEQUENCE FROM N.A.
RC
     STRAIN=cv. Columbia;
RX
    MEDLINE=21016720; PubMed=11130713; DOI=10.1038/35048706;
RA
     Salanoubat M., Lemcke K., Rieger M., Ansorge W., Unseld M.,
RA
     Fartmann B., Valle G., Bloecker H., Perez-Alonso M., Obermaier B.,
RA
     Delseny M., Boutry M., Grivell L.A., Mache R., Puigdomenech P.,
RA
     De Simone V., Choisne N., Artiguenave F., Robert C., Brottier P.,
RA
    Wincker P., Cattolico L., Weissenbach J., Saurin W., Quetier F.,
     Schaefer M., Mueller-Auer S., Gabel C., Fuchs M., Benes V.,
RA
RA
    Wurmbach E., Drzonek H., Erfle H., Jordan N., Bangert S.,
    Wiedelmann R., Kranz H., Voss H., Holland R., Brandt P., Nyakatura G.,
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     Vezzi A., D'Angelo M., Pallavicini A., Toppo S., Simionati B.,
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     Conrad A., Hornischer K., Kauer G., Loehnert T.-H., Nordsiek G.,
     Reichelt J., Scharfe M., Schoen O., Bargues M., Terol J., Climent J.,
RA
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     Cooke R., Laudie M., Berger-Llauro C., Purnelle B., Masuy D.,
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    Mannhaupt G., Haase D., Schoof H., Rudd S., Zaccaria P., Mewes H.-W.,
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    Mayer K.F.X., Kaul S., Town C.D., Koo H.L., Tallon L.J., Jenkins J.,
    Rooney T., Rizzo M., Walts A., Utterback T., Fujii C.Y., Shea T.P.,
RA
    Creasy T.H., Haas B., Maiti R., Wu D., Peterson J., Van Aken S.,
RA
RA
     Pai G., Militscher J., Sellers P., Gill J.E., Feldblyum T.V.,
RA
     Preuss D., Lin X., Nierman W.C., Salzberg S.L., White O., Venter J.C.,
RA
     Fraser C.M., Kaneko T., Nakamura Y., Sato S., Kato T., Asamizu E.,
RA
     Sasamoto S., Kimura T., Idesawa K., Kawashima K., Kishida Y.,
RA
     Kiyokawa C., Kohara M., Matsumoto M., Matsuno A., Muraki A.,
RA
    Nakayama S., Nakazaki N., Shinpo S., Takeuchi C., Wada T.,
RA
    Watanabe A., Yamada M., Yasuda M., Tabata S.;
RT
     "Sequence and analysis of chromosome 3 of the plant Arabidopsis
                                         200
RT
     thaliana.";
    Nature 408:820-822(2000). Decume
RL
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     [3]
     SEQUENCE FROM N.A. (ISOFORM 1).
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     STRAIN=cv. Columbia;
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    Yamada K., Lim J., Dale J.M., Chen H., Shinn P., Palm C.J.,
RA
    Southwick A.M., Wu H.C., Kim C.J., Nguyen M., Pham P.K., Cheuk R.F.,
RA
    Karlin-Newmann G., Liu S.X., Lam B., Sakano H., Wu T., Yu G.,
RA
    Miranda M., Quach H.L., Tripp M., Chang C.H., Lee J.M., Toriumi M.J.,
RA
    Chan M.M., Tang C.C., Onodera C.S., Deng J.M., Akiyama K., Ansari Y.,
RA
    Arakawa T., Banh J., Banno F., Bowser L., Brooks S.Y., Carninci P.,
RA
RA
     Chao Q., Choy N., Enju A., Goldsmith A.D., Gurjal M., Hansen N.F.,
    Hayashizaki Y., Johnson-Hopson C., Hsuan V.W., Iida K., Karnes M.,
RA
    Khan S., Koesema E., Ishida J., Jiang P.X., Jones T., Kawai J.,
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     Kamiya A., Meyers C., Nakajima M., Narusaka M., Seki M., Sakurai T.,
RA
     Satou M., Tamse R., Vaysberg M., Wallender E.K., Wong C., Yamamura Y.,
RA
     Yuan S., Shinozaki K., Davis R.W., Theologis A., Ecker J.R.;
RA
     "Empirical analysis of transcriptional activity in the Arabidopsis
RT
RT
    genome.";
    Science 302:842-846(2003).
RL
RN
RP
    SEQUENCE FROM N.A. (ISOFORM 2).
RA
    Brover V., Troukhan M., Alexandrov N., Lu Y.-P., Flavell R.,
RA
    Feldmann K.A.;
RT
     "Full-length cDNA from Arabidopsis thaliana.";
RL
    Submitted (MAR-2002) to the EMBL/GenBank/DDBJ databases.
CC
     -!- FUNCTION: Catalyzes the two-electron reduction of biliverdin IXa
        to the tetrapyrrole chromophore phytochromobilin (PPhiB).
CC
CC
     -!- CATALYTIC ACTIVITY: (3Z)-phytochromobilin + oxidized ferredoxin =
        biliverdin IX-alpha + reduced ferredoxin.
CC
CC
     -!- SUBCELLULAR LOCATION: Chloroplast.
CC
     -!- ALTERNATIVE PRODUCTS:
CC
        Event=Alternative splicing; Named isoforms=2;
CC
        Name=1;
CC
          IsoId=Q9SR43-1; Sequence=Displayed;
CC
        Name=2;
CC
          IsoId=Q9SR43-2; Sequence=VSP 008970;
CC
          Note=No experimental confirmation available;
CC
    -!- SIMILARITY: Belongs to the HY2 family.
CC
     -!- CAUTION: Ref.2 (AAD56331) sequence differs from that shown due to
CC
        erroneous gene model prediction.
CC
     ------
CC
    This SWISS-PROT entry is copyright. It is produced through a collaboration
CC
    between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC
    the European Bioinformatics Institute. There are no restrictions on its
CC
    use by non-profit institutions as long as its content is in no way
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    modified and this statement is not removed. Usage by and for commercial
CC
    entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC
    or send an email to license@isb-sib.ch).
     -----
CC
DR
    EMBL; AB045112; BAB33374.1; -.
DR
    EMBL; AC011436; AAF14017.1; -.
DR
    EMBL; AC009326; AAD56331.1; ALT SEQ.
DR
    EMBL; AY099706; AAM20557.1; -.
DR
    EMBL; AY128900; AAM91300.1; -.
DR
    EMBL; AY088874; AAM67180.1; ALT INIT.
DR
    InterPro; IPR009249; Fe_bilin red.
DR
    Pfam; PF05996; Fe_bilin_red; 1.
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KW
    Alternative splicing; Chloroplast; Oxidoreductase; Transit peptide.
                           Chloroplast (Potential).
FT
    TRANSIT
               1
                     ?
    CHAIN
                           Phytochromobilin: ferredoxin
FT
                   329
FT
                           oxidoreductase.
                           Missing (in isoform 2).
FT
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              75
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FT
FT
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              39
                    39
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 Query Match
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 Best Local Similarity 100.0%; Pred. No. 3e-127;
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                                            Indels
                                                     0;
                                                        Gaps
                                                               0;
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Qу
           1 MALSMEFGFSIGSCFKAPNPPVLISASPNKINFTLRRRKKRFLLRVSAVSYKEFAESALE 60
Db
         61 ETRKRIVLEPSHLOEKYSSMTGLDGKTELOMLAFKSSKIRLLRSMAIENETMQVFDFAGF 120
Qу
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Db
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Qу
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Qу
           Db
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        241 NCEAOHKYLTWRAOKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYOT 300
Qу
           Db
        241 NCEAOHKYLTWRAOKDPGHGLLKRLVGEAKAKELLRDFLFNGVDELGTKTFIDYFPEYOT 300
        301 EDGTVSDKRSIIGKSYETRPWDLTGOFIG 329
Qу
           301 EDGTVSDKRSIIGKSYETRPWDLTGQFIG 329
Db
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4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

			%	,			
Re	esult		Query				
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	2	158	9.2	236	2	S31058	hypothetical prote
	3	157	9.1	256	2	A46448	orf236 3' of cpeB
	4	121.5	7.0	245	2	AD2269	hypothetical prote
	5	110.5	6.4	549	1	A54541	alpha-amylase (EC
	6	105.5	6.1	248	2	S76709	hypothetical prote
	7	105	6.1	548	1	ALBSF	alpha-amylase (EC
	8	104.5	6.1	549	1	A24549	alpha-amylase (EC
	9	102.5	5.9	311	2	T30905	hypothetical prote
	10	95.5	5.5	595	2	B97866	DNA primase (EC 2.
	11	95.5	5.5	1125	1	F70177	transcription-repa
	12	95	5.5	574	2	B35149	ipaH protein - Shi
	13	94.5	5.5	649	2	T33741	DNA-binding protei
	14	94	5.5	1452	2	A97323	DNA polymerase III
	15	93.5	5.4	374	2	H70415	conserved hypothet
	16	93.5	5.4	386	2	G86652	GTP-binding protei
	17	93.5	5.4	2819	2	A90551	conserved

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Published Applications AA:*
Database :
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

		8				
Result		Query				
No.	Score	Match	Length	DB	ID	Description
1	1724	100.0	329	10	US-09-870-406A-33	Sequence 33, Appl
2	1724	100.0	329	10	US-09-870-406A-34	Sequence 34, Appl
3	1724	100.0	329	10	US-09-870-406A-55	Sequence 55, Appl
4	1724	100.0	329	14	US-10-159-901-33	Sequence 33, Appl
5	1724	100.0	329	14	US-10-159-901-34	Sequence 34, Appl
6	1724	100.0	329	14	US-10-159-901-55	Sequence 55, Appl
7	687	39.8	260	15	US-10-424-599-273255	Sequence 273255,
8	655.5	38.0	275	16	US-10-437-963-174730	Sequence 174730,
9	549	31.8	318	15	US-10-424-599-254892	Sequence 254892,
10	339.5	19.7	255	10	US-09-870-406A-54	Sequence 54

Database : Issued_Patents_AA:* 1: /cgn2_6/ptodata/1/iaa/5A_COMB.pep:* 2: /cgn2_6/ptodata/1/iaa/5B_COMB.pep:* 3: /cgn2_6/ptodata/1/iaa/6A_COMB.pep:* 4: /cgn2_6/ptodata/1/iaa/6B_COMB.pep:* 5: /cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep:* 6: /cgn2_6/ptodata/1/iaa/backfiles1.pep:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

		8				
Result		Query				
No.	Score	Match	Length	DB	ID	Description
1	110.5	6.4	514	3	US-09-182-859-6	Sequence 6, Appli
2	110.5	6.4	514	3	US-09-264-097-8	Sequence 8, Appli
3	110.5	6.4	514	4	US-09-672-459-6	Sequence 6, Appli
4	110.5	6.4	514	4	US-10-186-042-6	Sequence 6, Appli
5	110.5	6.4	515	3	US-09-291-023A-17	Sequence 17, Appl
6	110.5	6.4	515	4	US-09-537-168-8	Sequence 8, Appli
7	110.5	6.4	515	4	US-09-540-715A-17	Sequence 17, Appl
8	110.5	6.4	549	1	US-08-720-899-6	Sequence 6, Appli
9	110.5	6.4	549	1	US-08-459-610-6	Sequence 6, Appli
10	110.5	6.4	549	2	US-08-343-804-6	Sequence 6, Appli
11	110.5	6.4	549	2	US-08-687-399-6	Sequence 6, Appli
12	110.5	6.4	549	2	US-08-600-908A-6	Sequence 6, Appli
13	110.5	6.4	549	3	US-08-683-838A-6	Sequence 6, Appli
14	110.5	6.4	549	4	US-09-636-252A-6	Sequence 6, Appli